

In the claims

1. (Previously Presented) A driver circuit for driving simultaneously a variable number of firing resistors for a printhead during a printing firing cycle, the driver circuit comprising:

a drive circuit for supplying firing pulses for firing the variable number of firing resistors during the printing firing cycle;

a circuit for adjusting a magnitude of a voltage or a current of said drive signal during the printing firing cycle in dependence on the variable number of firing resistors to be fired simultaneously in a given subset during the printing firing cycle.

2. (Original) The driver circuit of Claim 1, wherein said drive circuit is a voltage source, and said circuit adjusts a voltage magnitude of said drive signal.

3. (Original) The driver circuit of Claim 2, wherein said circuit adjusts the voltage magnitude in dependence on said variable number of firing resistors being simultaneously fired.

4. (Original) The driver circuit of Claim 3, wherein said circuit provides an increased voltage magnitude for larger variable numbers.

5. (Previously Presented) The driver circuit of Claim 2, wherein said drive circuit supplies a voltage of a predetermined magnitude, and said circuit applies a data variable offset voltage dependent on said variable number of firing resistors and a fixed offset voltage not dependent on said variable number of firing resistors.

6. (Currently amended) The driver circuit of Claim 5, wherein said fixed offset voltage is inversely proportional to the variable number of firing resistors.

7. (Currently amended) The driver circuit of Claim 2, wherein said fixed offset voltage is a monotonically increasing function of said variable number of firing resistors.

8. (Withdrawn) In a printhead control apparatus comprising a driver circuit for providing energy pulses to a set of firing resistor loads connected in parallel, each load having a switch for connecting the load to the driver circuit so that a variable number of the loads can be simultaneously connected to the driver circuit to receive energy pulses during a printing firing cycle, a method for maintaining nominally constant energy in an individual load, the method comprising:

determining the variable number of the loads to be simultaneously connected to an energy source for the printing firing cycle during a given subset of the printing firing cycle;

adjusting a voltage magnitude or current magnitude of the energy pulse in dependence on the variable number during the given subset of the printing firing cycle, so that the voltage magnitude or current magnitude increases as the variable number increases to maintain a nominally constant energy applied to the load independent of the variable number.

9. (Withdrawn) The method of Claim 8, further comprising:

adjusting a pulse width of the energy pulse in dependence on the variable number, so that the pulse width increases as the variable number increases.

10. (Withdrawn) The method of Claim 8, wherein said energy source is a voltage source for providing a supply voltage having a constant source voltage magnitude, and wherein:

said adjusting a voltage magnitude comprises applying a voltage offset to said constant source voltage magnitude, and wherein a value of said voltage offset is inversely proportional to the variable number.

11. (Withdrawn) A method for driving an inkjet printhead having a set of firing resistors, each responsive to a firing pulse for ejecting ink from a corresponding nozzle, the firing resistors connected in parallel, there being a parasitic resistance effectively in series connection with said set of firing resistors, each resistor having an associated switch for connecting the resistor to a driver circuit so that a variable number of the resistors can be simultaneously connected to the driver circuit to receive energy pulses during a printing firing cycle, the method comprising:

determining the variable number of the loads to be simultaneously connected to the energy source for the printing firing cycle;

adjusting a voltage magnitude of the energy pulse in dependence on the variable number during a given subset of the printing firing cycle, so that the voltage magnitude increases as the variable number increases during the given subset of the printing firing cycle to maintain a nominally constant voltage applied to the load independent of the variable number.

12. (Withdrawn) The method of Claim 11, wherein said driver circuit includes a voltage source for providing a supply voltage having a constant source voltage magnitude, and wherein:

said adjusting a voltage magnitude comprises applying a voltage offset to said supply voltage, and wherein a value of said voltage offset is inversely proportional to the variable number.

13. (Previously Presented) A driver circuit for driving simultaneously a variable number of firing resistors for a printhead, the driver circuit comprising:

a drive circuit for supplying a drive signal for firing the variable number of firing resistors during a printing firing cycle;

means for adjusting a magnitude of a voltage or a current of said drive signal during the printing firing cycle in dependence on the variable number of firing resistors to be fired simultaneously in a given subset during the printing firing cycle.

14. (Original) The driver circuit of Claim 13, wherein said drive circuit includes a voltage source, and said adjusting means comprises means for adjusting a voltage magnitude of said drive signal.

15. (Original) The driver circuit of Claim 14, wherein said adjusting means comprises means for adjusting the voltage magnitude in dependence on said variable number of firing resistors being simultaneously fired.

16. (Original) The driver circuit of Claim 15, wherein said adjusting means provides an increased voltage magnitude for larger variable numbers.

17. (Previously Presented) The driver circuit of Claim 14, wherein said voltage supply supplies a voltage of a predetermined magnitude, and said adjusting means comprises circuit means for providing a data variable offset voltage dependent on said variable number of firing resistors and a fixed offset voltage not dependent on said variable number of firing resistors.

18. (Original) The driver circuit of Claim 17, wherein said offset voltage is inversely proportional to the variable number of firing resistors.

19. (Original) The driver circuit of Claim 13, wherein said magnitude is a monotonically increasing function of said variable number of firing resistors.

20. (Withdrawn) A driver circuit for firing simultaneously a variable number of firing resistors for associated nozzles in a printhead, the driver circuit comprising:

an energy source for providing electrical power to fire said firing resistors;

a nozzle counter for determining a nozzle count of the variable number of nozzles whose resistors are to be fired in a given printing firing cycle;

a programmable offset generator for generating an output control voltage or current dependent on said nozzle count during a given subset of the given printing firing cycle;

a drive circuit having an output connected to a circuit output terminal for connection to the printhead, said drive circuit for selectively applying variable voltage or current from said energy source to the circuit output in dependence on said output control voltage or current during the given subset of the given printing firing cycle.

21. (Withdrawn) The circuit of Claim 20, wherein said energy source is a voltage source, and said programmable offset generator generates a data variable offset output control voltage of a magnitude dependent on said nozzle value and a fixed offset output control voltage of a magnitude not dependent on said nozzle value.

22. (Withdrawn) The circuit of Claim 21, wherein said output control voltage value is proportional to the variable number of firing resistors.

23. (Withdrawn) A driver circuit for driving simultaneously a variable number of firing resistors for associated nozzles in a printhead, the driver circuit comprising:

a voltage source for providing electrical power to fire said firing resistors;
a nozzle counter for determining a nozzle count of the variable number of nozzles whose resistors are to be fired in a given subset of a printing firing cycle;
a programmable offset generator for generating an output control voltage dependent on said nozzle count during the subset of the printing firing cycle;
a high side drive circuit having an output connected to a circuit output terminal for connection to the printhead, said high side drive circuit for selectively applying a firing pulse having a programmable magnitude to the circuit output in dependence on said output control voltage during the printing firing cycle or current.

24. (Withdrawn) The circuit of Claim 23, wherein said output control voltage value is proportional to the variable number of firing resistors.